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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,732	03/11/2004	Charles E. Taylor	112440-129	4986

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EXAMINER	
BEHNCKE, CHRISTINE M	
ART UNIT	PAPER NUMBER
3661	
MAIL DATE	DELIVERY MODE
09/04/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/798,732	TAYLOR ET AL.	
	Examiner	Art Unit	
	CHRISTINE M. BEHNCKE	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-101* is/are pending in the application.

4a) Of the above claim(s) *23-96* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22 and 97-101* is/are rejected.

7)☒ Claim(s) *9-11 and 20-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *NPL: WO2002075470*.

DETAILED ACTION

This office action is in response to the Amendment and Remarks filed 19 May 2008, in which claims 1-22 and 97-101 were presented for examination; 23-96 are withdrawn.

Response to Arguments

Applicant's arguments with respect to claims 1-22 have been considered, but are moot in view of the new ground(s) of rejection. Although not applied, the Examiner disagrees with Applicant's contention the previously applied reference Baur does not show a second map of a lower resolution than a first map, see Baur column 2, lines 42-51.

Claim Objections

Claims 9-11 and 20-22 are objected to because of they lack antecedent basis: the dependent claims refer to "the region" or "the next region", however a region was not previously claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2-4, 8, 9, 11-15, 19, 20, 22, 97, 98, 100, and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldred, US 2005/0046373, in view of Kurtzberg, US 6,167,332.

(Claims 1, 2-4, 9, 11-15, 20, 22, 97, 98, 100, and 101) Aldred describes a method of operating and a robot cleaner comprising: causing at least one wheel to

move, wherein the wheel is coupled to a body including a cleaning unit (driven wheels 104, [0018]); at least one motor operatively coupled to the at least one wheel (motor 105); at least one processor operatively coupled to the at least one motor (power controller 240 and microprocessor 200); at least one input device coupled to the at least one processor (user interface 140); at least one sensor operatively coupled to the at least one processor (sensors 150, 152, 154); at least one memory device storing a plurality of instructions which are executable by the at least one processor (control software 210, memory 220); causing the body to travel on a surface along a travel path ([0012]-[0013]); during the traveling: gathering data corresponding to each traveled space and each non-traveled space ([0050] and uncleaned regions [0074]); at least partially cleaning the spaces ([0074]); storing the data, the stored data representing a map ([0050], [0081]); determining which part of the map has a largest area of non-traveled spaces ([0083]); and changing the travel path based on the determination of largest non-traveled spaces ([0083]-[0084]). Aldred further describes wherein the map is cleaned in a serpentine clean ([0070]). Aldred does not specify that the next movement is to the highest percentage, but only to the next largest area of uncleaned spaces (figure 11). However it would have been obvious to one of ordinary skill in the art to present or form the data as a percentage or as a raw amount, both means convey the same information of the largest uncleaned area. Aldred does not specify the surface is defined by a plurality of cells. However, Kurtzberg teaches a method of navigation for an autonomous vehicle, including the surface area which the vehicle is to travel, the map, is defined by a plurality of cells (figures 6 and 8), wherein the map is a subgrid map

(figure 6, local grid). Kurtzberg further teaches wherein the map contains information about the region being traversed (column 3, lines 49-53); and wherein a new map is prepared for the next region to be traversed (column 3, lines 54-65). Kurtzberg further teaches as the vehicle travels, creating a first map (local grid), creating a second map (global map), wherein the first map is a subgrid map (figure 6), wherein the second map is of a lower resolution than the first map (column 3, lines 20-29, figure 7), and wherein the second map is a room map (global map – figure 4). It would have been obvious to one of ordinary skill in the robotic art to modify Aldred with the teachings of Kurtzberg because the mapping method taught by Kurtzberg lowers the operational costs of navigating through a large area (column 1, lines 56-65).

(Claims 8 and 19) Aldred further describes wherein the ma is a room map (figure 5).

(Claims 9 and 20) Aldred further describes wherein the map contains information about a region being cleaned (figures 11 and 12).

Claim Rejections - 35 USC § 103

Claims 5-7, 10, 16-18, 21 and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldred in view of Kurtzberg as applied to claims 1, 12 and 97 above, and further in view of Hulden, WO02/075470, .

Neither Aldred or Kurtzberg describe marking the cells as obstacle, cleaned, or uncleaned. However, Hulden teaches an autonomous vehicle used for cleaning surfaces mapped a plurality of cells (figure 5), wherein the cells are marked as obstacle, cleaned, or uncleaned (figure 8).Neither Aldred or Kurtzberg describe the width and size

of the cells corresponding to the width of the robot cleaner. However, Hulden teaches the cells of the map are determined to be a size corresponding to the size of the vacuum cleaning unit of the robot (page 15, lines 21-25). Hulden further teaches wherein a cell can be cleaned with a single straight line path segment of robot cleaner (figures 11G and H). Hulden further teaches wherein as the area is being cleaned, after a cell or space is cleaned it is cleared on the map (figures 11A-P). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the description of Aldred in view of Kurtzberg with the teachings of Hulden, because like Aldred and Kurtzberg, Hulden plans navigation in terms of costs and the further information of the map and its costs, like obstacles, allows for better and closer cleaning, particularly with obstacles not at a boundary (Hulden, figure 12).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE M. BEHNCKE whose telephone number is (571)272-8103. The examiner can normally be reached on 8:30 am- 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. M. B./
Examiner, Art Unit 3661

/Thomas G. Black/
Supervisory Patent Examiner, Art Unit 3661